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Biotechnology Notes

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Biotechnology Notes, a compilation of agency activities, news events, and upcoming meetings, is prepared for members of the U.S. Department of Agriculture's (USDA) Committee on Biotechnology in Agriculture (CBA) by USDA's Office of Agricultural Biotechnology (OAB).

INSIDE USDA

APHIS FACTS AND FIGURES

Which genetically engineered crops were field tested most often from 1987 to 1995? Can you name four new products produced through biotechnology that are no longer regulated by USDA's Animal and Plant Health Inspection Service (APHIS)? Answers to these questions and many others are found in a one-page (2-sided) information sheet available from APHIS/BBEP (Biotechnology, Biologics, and Environmental Protection) Division. To request a copy of "Activities of the Animal and Plant Health Inspection Service, BBEP - 1994," please call 301-734-7602; Fax: 301-734-8724. Next month's issue of *Biotechnology Notes* will describe new ways the public can access information electronically from BBEP.

OAB RELOCATES TO WASHINGTON, DC

USDA's Office of Agricultural Biotechnology (OAB) has moved from Rosslyn, VA to Washington, DC. The move will help to facilitate closer coordination with other agencies and with OAB's servicing organization, the Cooperative State Research, Education and Extension Service (CSREES). The office will continue to report to the Undersecretary for Research, Education and Economics. OAB's new mailing address and phone, fax, and e-mail numbers are as follows:

USDA/OAB/CSREES
Ag Box 0904, Room 3868, South Bldg.
14th & Independence Avenues, S.W.
Washington, DC 20250-0904
Phone: 202-720-5853
Fax: 202-720-5336
E-mail: masner@esusda.gov

PERMITS REQUESTED

USDA's APHIS recently received applications requesting permits to field test genetically engineered potatoes, sugar beets, and watermelon. APHIS has 120 days to review the applications and accompanying data and make a decision.

The potato plants have been genetically engineered to express a gene from *Bacillus thuringiensis* for resistance to Colorado potato beetles, and to express a gene from potato leaf roll virus for resistance to this particular virus. Test sites would be in eight states. The sugar beet plants were genetically engineered to express tolerance to the herbicide glufosinate, and testing would take place in eight states. The watermelon plants have been engineered to express resistance to watermelon mosaic virus 2 and to zucchini yellow mosaic virus. Testing would be in one state.

Copies of the applications are available for public inspection in Room 1141, South Bldg., USDA, 14th Street and Independence Ave., S.W., Washington. Persons wishing to inspect an application are requested to call ahead (202-690-2817). Copies may also be obtained by writing to Arnold Foudin, Deputy Director, Biotechnology Permits, BBEP, APHIS, USDA, P.O. Drawer 810, Riverdale, MD 20783. For more details, please call 301-734-7612.

NEWS AROUND THE NATION (AND THE WORLD)

BIOTECHNOLOGY ON CAMPUS

This is the second in a series of articles profiling agricultural biotechnology programs at U.S. colleges and universities. This month we visit the University of Wisconsin's Biotechnology Center.

The University of Wisconsin Biotechnology Center was established in 1984 on the University of Wisconsin - Madison campus. It provides outreach activities that include biotechnology education and technology transfer activities, and database search and document delivery services. Its research arm includes a plant biotechnology laboratory that focuses on protoplast fusion to produce somatic hybrids, the transformation of potato and alfalfa, and a biopulping research group. Fee-for-service activities include automated DNA sequencing, custom oligonucleotide synthesis, protein sequencing, peptide synthesis support, bioseparations, and hybridoma production. The transgenic animal facility produces transgenic mice and rats and conducts cryopreservation of mouse embryos. To learn more about the Center, please call 608-262-8606; Fax: 608-262-6748. *NEXT MONTH: Alabama A & M University's Center for Molecular Biology*

ALL ABOUT THE PIG GENOME

Lawrence B. Schook, professor and chair of veterinary pathobiology and director of the Food Animal Biotechnology Center at the University of Minnesota, has written an easy-to-read booklet called "Mapping the Pig Genome: A Practical Primer." He begins with the fundamentals of heredity and genetics and gradually moves on to the role of markers and the principles of gene mapping.

"The immediate goal of the pig genome research program is to provide a comprehensive linkage and physical map for economically important genes," says Schook. He says an accurate map will allow producers to manage individual animals based on early knowledge of their genetic potential, cull animals at a young age, help eliminate genetic diseases, reduce the use of chemicals and drugs by enhancing the animals' own resistance, and reduce the use of exogenous growth promoters and make use of naturally occurring genes to enhance performance. For ordering information, please write to the MES Distribution Center, 1420 Eckles Ave., University of Minnesota, St. Paul, MN 55108-6069 and ask for item number MR-6522.

PROGRESS REPORT: THE ARABIDOPSIS GENOME PROJECT

What do mouse ears, wallflower, penny cress, and wild mustard all have in common? You got it! They are all common names for *Arabidopsis*, a small green plant whose genome is being sequenced by researchers around the world. Once the entire plant has been mapped, scientists will be able to use the information to better understand genomes in other plants without having the tedious task of sequencing their entire genomes. Another expectation is that data about novel genes could be identified and used in other species.

The European Community (EC) recently published a summary of its activities in the *PIP Newsletter* (Number 7, Jan. 1995) and reports that by year 1996 it will have sequenced 2 million base pairs of the genome and by 1999 the EC may complete 10 million base pairs, which is a major portion of a chromosome. Colleagues in the United States will make a similar contribution by the year 2000. It is estimated that *Arabidopsis* contains 100 million base pairs. The entire project should be completed by the year 2004. To learn more about the EC's role in mapping the *Arabidopsis* genome, please send a fax to Mike Bevan at 44-1603-505-725; E-mail: bevan@bbsrc.ac.uk.

SUICIDE GENES

In the article "Suicide Microbes on the Loose," the authors report they are trying to design active biological containment systems to help reduce some of the uncertainties associated with microbial

release. The systems have two elements: a killing element and a control element that activates (or depresses) the killing function under certain conditions. The authors caution that no system is perfect. "We cannot design systems that totally eliminate a population of physically uncontained microorganisms . . . mutations can never be eliminated." The article appears in the January issue of *Bio/Technology*, Vol. 13, pages 35-37.

CANADIANS TO STUDY ETHICAL ISSUES

Legal, social, ethical, and medical issues related to DNA research will be investigated by Canadian researchers, according to the January issue of *The AgBiotech Bulletin*. The study will be conducted by researchers at the Universities of Calgary and Montreal. They have been given \$130,000 to conduct the research and develop guidelines for DNA researchers. The project is part of the Human Genome Project, and the examination of ethics is seen as Canada's unique contribution to the international effort.

BEAM ME UP, SCOTTY

A national symposium and interactive videoconference entitled "Science That Means Business" will be broadcast by Maryland Public Television, March 23, from 1 p.m. to 3 p.m. EST. Five panelists from universities and industry will discuss how to move promising research from the lab to the marketplace, how to create mechanisms for funding research in partnership with industry, and how market changes and government policies affect technology transfer. The intended audience includes university research faculty, graduate students and administrators, start-up executives, policy makers, patent attorneys, and high technology and economic development officials. There will be a live studio audience as well as remote audiences who can downlink by satellite. For more details, please call the University of Maryland, Baltimore Campus, at 410-706-1874 or 1876 or PBS at 1-800-257-2578.

WHO KNOWS WHAT

In a New Zealand study called "Bioethics for the People by the People," 23 percent of New Zealanders said they never heard of biotechnology while 98 percent of Thais said they have. The study was summarized in *The AgBiotech Bulletin*.

Ten countries were polled including Australia, Hong Kong, India, Israel, Japan, New Zealand, Philippines, Russia, Singapore, and Thailand. The study names Thailand as the most biotech-friendly country. The report was headed by Darrel Macer and is published by the Eubios Ethics Institute in Christchurch, New Zealand.

COURSE ANNOUNCEMENT

The Catholic University of America's Center for Advanced Training in Cell and Molecular Biology is again offering summer courses for 1995 at its Washington, DC campus. Fifteen different courses are being offered including recombinant DNA methodology, PCR techniques, DNA sequencing, plant biotechnology, gene transfer and expression, and DNA-binding proteins and transcriptional regulators. Each course lasts from two to four days and runs from May through July. For more details, please call 202-319-6161; Fax: 202-319-4467; E-mail: millerm@cua.edu

ALL ABOUT BIOPOLYMERS

A one-page, plain English information bulletin entitled "Biopolymers: Plastics From Plants" is available from Ag-West Biotech Inc. To receive a copy, please write to Murray McLaughlin, President, Ag-West Biotech Inc., 222-111 Research Drive, Saskatoon, Saskatchewan, S7N 3R2 Canada; or call 306-975-1939; Fax: 306-975-1966.

IN CASE YOU WEREN'T THERE

■ Chuck Ludlum, vice president of government relations at the Biotechnology Industry Organization (BIO), gave an overview of legislative issues at BIO's monthly meeting. He said the "hot" topics on Capitol Hill these days include FDA's labeling policy for biotechnology foods, changes in intellectual property law, the farm bill, FIFRA proposals, tax incentives, NIH's CRADA's, and the regulatory climate in general. In light of Federal government downsizing, he said technology transfer programs are the key to keep funds and research flowing. Labeling of bST products is still an issue in the states, said Ludlum, and noted that BIO is closely monitoring developments. (See "Upcoming Meetings" section of this news publication for future BIO-sponsored lectures in the Washington, DC area.)

■ A workshop on development of clinical genome services was held at the National Agricultural Library, February 2, in Beltsville, MD. Invited speakers discussed both the human genome program and the plant and animal genome programs. Daniel Drell of the Department of Energy said three percent of the human genome budget (or \$2 million per year) is allocated for the study of ethical, legal, and social issues. He said the most striking feature of the program is the marked shift from an initial preponderance of applications to do research to a current majority of applications

focused on educational activities. Nevertheless, he said DOE still encourages research directed at issues associated with genetic privacy, workplace uses of genetic information, and genetic predisposition issues. Jerome Miksche, program leader for USDA's Plant Genome Research Program, said most genome research is focusing on trees (poplar, loblolly), crucifers (mustards), grasses (barley, wheat), legumes (soybeans), and *Solanum* species (potatoes, tomatoes, and tobacco). Other speakers included Victor McKusick of Johns Hopkins University who described the Human Genome Organization, Jay Snoddy of DOE who discussed technology transfer and educational outreach, and Richard Frahm, USDA Program Leader for the Animal Genome Research Program.

■ **Biotechnology highlighted four sessions at the 1995 Annual Meeting of the American Association for the Advancement of Science (AAAS), February 16-21 in Atlanta, GA.** The first session, organized by Gerald Gaull of Georgetown University's Center for Food and Nutrition Policy and Alvin Young, USDA/OAB Director, described results of surveys that indicate a limited understanding of biotechnology by consumers but a general acceptance of ag biotechnology and its perceived benefits.

A second session compared farmers in California, Wisconsin, and New York to assess their acceptance of bST in dairy herds. The perceived threat to the family farm in Wisconsin is reflected in low adoption rates and labeling requirements in that state, whereas farmers in New York and California are more receptive to the technology.

A third session addressed a range of political, economic, and social issues. While researchers emphasized the value of new products and efforts to assess risk, opponents question both health and safety. Most agreed that the debate may never be resolved to everyone's satisfaction. Audience members suggested that the debate must move on to a new level of cooperation and action with a global focus.

The final session addressed the global issue of feeding the projected world population of 10 billion by the year 2030. The tools of biotechnology were identified as key to increasing global crop and animal productivity. However, the speakers all agreed that until the limits of population growth are defined, we will be unable to solve the problem of food sufficiency.

This summary of the AAAS conference was prepared with the assistance of Ann Holbrow and Robin Woo at Georgetown University, Washington, DC. Both may be contacted at 202-687-6349; Fax: 202-687-7723.

NEW PUBLICATIONS

■ New Developments in Marine Biotechnology (A6C-184B). Published by Business Communications Company Inc., Norwalk, CT. September 1994. To order, call 203-853-4266; Fax: 203-853-0348.

UPCOMING MEETINGS

March 6-7: "Food Policies for the 21st Century: Putting the Consumer First." Washington, DC. Sponsored by Public Voice for Food and Health Policy in Cooperation with the National Food Processors Association. For more details, please call Alison Weiss at 202-371-1840; Fax: 202-371-1910.

March 13-17: "Protein Biotechnology--Production, Clarification, Characterization and Stabilization." Amersfoort, The Netherlands. For details please write to A. W. Schram, BioUpdate Foundation, P.O. Box 3045, 1400 EA Bussum, The Netherlands or send a fax to 31-2159-33910.

March 14: "FDA's New Rules on Adverse Event Reporting." Lecture sponsored by BIO trade association. Washington, DC. For details, please call 202-857-0244; Fax: 202-331-8132.

March 17-23: Toward the Genetic Manipulation of Insects. Tamarron, Colorado. Sponsored by Keystone Symposia. Call 303-262-1230; Fax: 303-262-1525.

March 29-April 4: Signal Transduction in Plants. Hilton Head, SC. Sponsored by Keystone Symposia. For details call 303-262-1230; Fax: 303-262-1525.

April 3-6: International Symposium on Weed and Crop Resistance to Herbicides, University of Cordoba, Spain. Call Jesus Jorrin at 57-218439.

April 10: "Consumer Issues in Biotechnology: Genetically Engineered Foods." Atlanta, GA. Sponsored by the American Institute of Nutrition, Georgetown University, and OAB/USDA.

April 11: "Dealing Effectively With the Media." Lecture sponsored by BIO trade association. Washington, DC. For details, please call 202-857-0244; Fax: 202-331-8132.

May 14-17: "Biotechnology's Role in the Genetic Improvement of Farm Animals." Beltsville, MD. Sponsored by USDA's Agricultural Research Service. For more details, please call Virginia Hupfer at 301-504-6108; Fax: 301-504-6357.

May 17-18: "Applications of Cellular and Molecular Biology to Animal Science Research." Beltsville, MD. Annual meeting sponsored by the North Central Region-150 of CSREES Research Directors. For details, please call Nancy Aldridge at 317-494-8362; E-mail: nma@aes.purdue.edu

May 20-25: BIO Ninth International Meeting and Exhibition. San Francisco, CA. Sponsored by BIO Organization. For details please call 202-857-0244; Fax: 202-331-8132.

June 10-13: "Value-Added Cereals Through Biotechnology" Saskatoon, Saskatchewan, Canada. For details please call Rosemarie Gallays at 306-975-5571; Fax: 306-975-4839.

June 23-26: "8th International Symposium on Staphylococci and Staphylococcal Infections." Aix-Les-Bains, France. For details, please call 33-1-4568-8179; Fax: 33-1-45-6746-98.

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